

**REMARKS**

Claims 1-20, all the claims pending in the application, stand rejected on prior art grounds.

Claims 1, 5, 7-11, and 16 are amended herein. Applicants respectfully traverse the rejections based on the following discussion.

**I. The Prior Art Rejections**

Claims 1-5 and 7-10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bond, et al. (U.S. Patent No. 5,724,728), hereinafter referred to as Bond, in view of Levy (U.S. Patent No. 5,673,028), hereinafter referred to as Levy'028'. Claim 1 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kobayashi (U.S. Patent No. 5,615,250), in view of Levy'028'. Claim 11 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Miyata (JP 2001-015673 A), in view of Levy'028'. Claims 16-19 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Matsuura (U.S. Patent No. 6,673,484), in view of Levy'028'. Claim 20 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Matsuura, in view of Levy'028', and in further view of Tuttle (U.S. Patent No. 6,548,207). Claims 12-15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Miyata, in view of Levy'028', in further view of Levy (U.S. Patent No. 4,026,304), hereinafter referred to as Levy'304'. Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Bond, in view of Tuttle. Applicants respectfully traverse these rejections based on the following discussion.

Bond discloses a system for packaging integrated circuit components including a ball grid array substrate with a plurality of solder balls coupled to the substrate. A semiconductor device is mounted on the substrate and electrically coupled to the solder balls. One or more terminals are coupled to the substrate and electrically coupled to said semiconductor device. A detachable

module contains auxiliary component. The module comprises a body portion for containing the component and one or more electrical connectors for mating with respective terminals to hold the module to the substrate and to electrically couple the component with the semiconductor device. The terminals may also be connected to the solder balls such that a component may be optionally provided either on the circuit board or in the detachable module.

Levy '028 discloses an electronic component failure indicator for clearly visibly indicating on the surface of an electronic component to be tested a self sustaining indication of the functional operational status of the component. It is used for easily locating and identifying the exact used electronic component that has failed while it is still in a circuit and also later after it is removed from a circuit without the need of test equipment and electrical power. It includes an electronic testing circuit which continually monitors one or more parameters of the electronic component other than temperature. Upon a determination that one or more parameters has deviated from a normal condition, the test circuit generates an appropriate signal. This in turn causes a visible change in an indicator that is visible on the surface of the electronic component being monitored. In some embodiments, this may constitute a color change of the indicator, and in other embodiments, it may cause a bending or movement of the indicator. In the preferred embodiment, the generation of a signal by the test circuit causes current to flow through a wire heating means that heats a thermo-sensitive material, thereby changing the color of the thermo-sensitive material. This thermo-sensitive material is positioned so as to be visible on the surface of the electronic component. By examining the surface of the electronic component and in particular the visible change indicator, a person can determine whether or not the electronic component has failed.

Miyata discloses means to house a button battery with no increase in an IC package size

and to supply a power source even to another IC outside the package. A negative electrode formed on the rear surface of the substrate of an IC chip is allowed to be exposed above the bottom surface of a recessed part for inserting a battery. A button battery is attached to the recessed part so that the negative pole of the button battery directly contacts the negative electrode on the bottom surface of the recessed part. Thus, the thickness of the IC chip, an IC package, and the button battery in laminated direction is thinner and a button battery is housed with no increase in the size of the IC package. The negative electrode on the bottom surface of the recessed part and a positive electrode provided on the inside surface of the recessed part are connected even to a power source terminal inserted at the IC package through wires, so a power source is supplied even to another IC outside the package through the power source terminal.

Matsuura discloses an IC assembly that includes a circuit board; an IC device mounted on the circuit board, said IC device including an IC placed on the circuit board and a plurality of connecting terminals for fixing the IC onto the circuit board; and a battery cell mounted on the circuit board in such a manner that one of the IC device and the battery cell overlaps the other in a direction substantially perpendicular to the circuit board, wherein a plurality of electrode-connecting terminals are provided to electrically connect the battery cell to the circuit board.

Tuttle discloses thin-profile battery circuits and constructions, and in particular button-type battery circuits and constructions and methods of forming the same. In one implementation, a substrate is provided having an outer surface with a pair of spaced electrical contact pads thereon. At least two thin-profile batteries are conductively bonded together in a stack having a lowermost battery and an uppermost battery. The batteries include respective positive and negative terminals. The lowermost battery has one of its positive or negative terminals adhesively bonded to one of the pair of electrical contact pads while the uppermost battery has

one of its positive or negative terminals electrically connected to the other of the pair of electrical contact pads. The batteries can be provided into parallel or series electrical connections.

Levy '304 discloses a method and apparatus for stimulating *in vivo* bone growth whereby a train of electrical pulses, rather than a direct current potential, is applied to the bone *in vivo* to produce faster and more satisfactory growth than a direct current voltage.

Kobayashi discloses a portable telephone set that includes a main section thereof, an IC card, and a battery pack, which are removably connected to each other. The battery pack has an L-shaped rib to provide a slot in which the IC card is inserted. When the IC card is inserted in the slot, a side surface of the IC card is brought into contact with a side surface of the battery pack to be held therein in a unified form. In the combined state, a hook section of the battery pack is engaged with an engaging section of the main section. When the battery pack is pushed downward, a depressed portion of the battery pack is engaged with a lock member of the main section so as to fixedly attach the battery pack onto the main section. The IC card is pushed by the battery pack to be brought into contact with a connector of the main section so as to establish a stable connection therebetween. There is provided a small-sized, low-cost portable telephone set having improved operability of IC card installation and removal.

However, the claimed invention, as provided in independent claims 1, 5, 7, 10, 11, and 16 contain features, which are patentably distinguishable from the prior art references of record. Specifically, claims 1, 5, 7, 10, 11, and 16 all refer to a "solid state battery comprising battery cell arrays and control circuitry." Conversely, none of the prior art references, namely, Bond, Matsuura, Miyata, Tuttle, Kobayashi, Levy '028, or Levy '304 provide a solid state battery comprising battery cell arrays and control circuitry. Levy '304 does not describe what type of solid state battery is being utilized and presumably based on the limited discussion in Levy '304

pertaining to solid state batteries, it appears that Levy '304's solid state battery has only one body and no active circuitries because Levy '304 discusses its solid state battery in the same context as a chemical rechargeable battery.

The majority of the prior art references cited in the Office Action only provide electrochemical batteries. An electrochemical battery; i.e., a "cell", is a device whereby the reaction between two substances occur in such a manner that some of the chemical energy is converted to useful electricity. Certain cells are capable of only a few charge-discharge cycles. Such is the case with certain silver oxide-zinc batteries. These batteries are not capable of the repeated cycling required of a satellite battery system, and are, therefore, considered to be "rechargeable primary" rather than storage batteries. Furthermore, an electrochemical battery is a device in which an "electrochemical" reaction takes place such that the "electrical" part of the reaction proceeds via the metallic path of the external circuit, while the "chemical" part of the reaction occurs via ionic conduction through an electrolyte.

The Applicants' solid state batteries are formed on a semiconductor chip using semiconductor material and processing. The button battery (such as described in Tuttle) and others are conventional chemical-electrical type batteries formed using thick film technology. These batteries are discrete devices, separately packaged, and are generally not formed on a semiconductor substrate and not fabricated by using semiconductor processes. The disadvantages of the conventional batteries in Bond, Matsuura, Miyata, Tuttle are: (1) bulky, (2) low-efficiency; and (3) hard to be integrated with chips. Moreover, the conventional batteries are typically just mechanically clipped in the package, while the Applicants' solid state battery is mounted like a chip using C4 or wiring bonding.

With respect to claims 1-5 and 7-10, page 3 of the Office Action suggests that Bond and

Levy '028 "are analogous art because they are from the same field of endeavour." However, the USPTO in classifying these patents has concluded the contrary; i.e., that Bond and Levy '028 are not in the same art field. The USPTO has classified Bond in U.S. Classes 29/840; 257/678; 437/214; and 439/73 with a field of search including 228/20.1, 49.5, 228/212, 62; 29/840; 257/678; 437/214; and 439/73. Conversely, the USPTO has classified Levy '028 in U.S. Classes 340/635; 340/653; 324/555; 324/556; 116/208; and 116/216 with a field of search including 340/635, 653; 324/555, 556; and 116/276, 207, 209, 211, 216, 217, 219, and 221. Thus, there are no overlapping classes. Accordingly, one of ordinary skill in the art would not be motivated to combine references from two separate and wholly different art fields as classified by the USPTO in order to try and teach the Applicants' claimed invention. Hence, the proposed combination of Bond and Levy '028 is improper; accordingly claims 1-5 and 7-10 are patentable over Bond and Levy '028.

With respect to the rejection of independent claim 1, page 2 of the Office Action states that Bond teaches "a package (12) having a pair of opposed upright ends," whereas, in fact, the opposite is true. A closer analysis of Bond shows that the ends of the package (12) as clearly illustrated in FIGS. 1A, 1B, 2, and 4A of Bond clearly shows the ends of the package (12) as not being upright, but rather being planar with the other portions of the package (12). Additionally, Levy does not teach solid state batteries comprising battery cell arrays and control circuitry as does the Applicants' claimed invention. Therefore, Bond and Levy are missing a structural element recited in the Applicants' independent claim 1, and as such the rejection of independent claim 1 based on Bond in view of Levy is deficient and improper; accordingly independent claim 1 is patentable over Bond in view of Levy.

With respect to the rejection of independent claim 1, pages 6-7 of the Office Action states

that Kobayashi discloses "a package (20) having a pair of opposed upright ends (8, 9)." However, the Applicants suggest that the Office Action is incorrectly characterizing lock member 9 of Kobayashi as an upright end, because (a) lock member 9 is not disposed at an end of the casing 20 (in fact, lock member 9 is disposed in the middle of the casing 20), and (b) lock member 9 is not upright (in fact, lock member 9 is a cantilever structure). Nonetheless, Applicants have amended independent claims 1, 5, 7, 10, and 16 to include, "wherein said pair of opposed upright ends comprise a first end having a first upper surface and a second end having a second upper surface, wherein the first and second surfaces are substantially planar to one another," which further distinguishes the Applicants' claimed invention from Kobayashi. These features relating to the planar upper surfaces of the opposed upright ends are clearly presented in Applicants' Figures 1-3 and are impossible to achieve in Kobayashi due to the configuration of casing 20 and battery pack 3. Additionally, Levy does not teach solid state batteries comprising battery cell arrays and control circuitry as does the Applicants' claimed invention. As such, independent claim 1 is patentable over Kobayashi in view of Levy.

Furthermore, with respect to claim 1, page 7 of the Office Action suggests that Kobayashi and Levy '028 "are analogous art because they are from the same field of endeavour." However, the USPTO in classifying these patents has concluded the contrary; i.e., that Kobayashi and Levy '028 are not in the same art field. The USPTO has classified Kobayashi in U.S. Classes 455/558 and 379/357.01 with a field of search including 379/61, 58, 357; 379/447, 446; 455/89, 90, 127, 343; 257/679; and D14/142 and 138. Conversely, the USPTO has classified Levy '028 in U.S. Classes 340/635; 340/653; 324/555; 324/556; 116/208; and 116/216 with a field of search including 340/635, 653; 324/555, 556; and 116/276, 207, 209, 211, 216, 217, 219, and 221. Thus, there are no overlapping classes. Accordingly, one of ordinary skill in the art would not be

motivated to combine references from two separate and wholly different art fields as classified by the USPTO in order to try and teach the Applicants' claimed invention. Hence, the proposed combination of Kobayashi and Levy '028 is improper; accordingly claim 1 is patentable over Kobayashi and Levy '028.

With respect to the rejection of dependent claim 2, page 3 of the Office Action states that Bond teaches that the "package (12) connects to said at least one integrated circuit chip (18) through an interior portion of said package (12)." However, it appears that the Office Action is interpreting Bond in a contradictory manner in order to reject the Applicants' claimed invention. In this regard, the Office Action is suggesting that the integrated circuit chip (18) connects to the package (12) through an interior portion of the package (12). Conversely, on page 2 of the Office Action, with respect to the rejection of claim 1, the Office Action states that the "integrated circuit chip (18) lays on top of a portion of said package (12)," which is contrary to the position taken with respect to the rejection of claim 2. In other words, in the rejection of claim 1, the Office Action suggests that the integrated circuit chip (18) is connected to the top of the package, whereas in the rejection of claim 2, the Office Action suggests the integrated circuit chip (18) is connected to the interior side of the package. Accordingly, the rejection to dependent claim 2 is improper as being contrary to the rejection to independent claim 1. As such, dependent claim 2 is patentable over Bond in view of Levy.

With respect to dependent claim 3, pages 3-4 of the Office Action states that Bond teaches that the "at least one integrated circuit chip (18) connects to an upper indent portion of said package (14)." Here, the Office Action is referring to the upper module (14) of Bond as the "package", whereas in the rejection to claim 1, the Office Action refers to the lower module (12) of Bond as the "package". If it is assumed that upper module (14) of Bond is analogous to the

Applicants' claimed "package", then clearly the indented portion of upper module (14) is located on its bottom (lower) side rather than its top (upper) side. This is clearly shown in FIGS. 1A, 1B of Bond, and inferred in FIGS. 2, 4A, and 4B of Bond. Alternatively, if it is assumed that the Office Action is referring to package (12), then clearly package (12) in Bond contains no indented portion. As such, Bond is missing a structural element recited in dependent claim 3, and as such the rejection of dependent claim 3 based on Bond is deficient and improper; accordingly dependent claim 3 is patentable over Bond in view of Levy.

With respect to dependent claim 4, page 4 of the Office Action indicates that Bond teaches that the "battery (solid state battery) connects to an underside of said package (12)". However, Bond does not teach a solid state battery and it appears that the Office Action is interpreting Bond in a contradictory manner in order to reject the Applicants' claimed invention. In this regard, the Office Action is suggesting that battery (28) connects to the bottom of the package (12). Conversely, on page 2 of the Office Action, with respect to the rejection of claim 1, the Office Action states that the "integrated circuit chip (18) lays on top of a portion of said package (12)," which is contrary to the position taken with respect to the rejection of claim 3. In other words, in the rejection of claim 1, the Office Action suggests that the integrated circuit chip (18) is connected to the top of the package, whereas in the rejection of claim 4, the Office Action suggests the battery (28) is connected to the underside of the package (12). Thus, in one rejection, the Office Action declares what it constitutes as the upper (top) side of the package (12), and in another rejection, the Office Action declares the contrary. As FIGS. 1A and 1B of Bond clearly illustrate, there is only one top portion and one bottom (underside) portion of package 12, and in both instances, the integrated circuit (18) connects to the interior portion of the package (12). Moreover, the battery (28) in Bond does not connect to the package (12), but

rather the upper module (14) housing the battery (28) connects to the lower module (12). Hence, the conclusion reached in the Office Action that the battery (28) connects to the bottom of the package (12) is improperly broad. Additionally, Levy does not teach solid state batteries comprising battery cell arrays and control circuitry as does the Applicants' claimed invention. Accordingly, the rejection to dependent claim 4 is improper as being contrary to the rejection to independent claim 1. As such, dependent claim 4 is patentable over Bond in view of Levy.

With respect to claim 5, page 4 of the Office Action provides that Bond teaches that the "battery (solid state) connects to a pair of opposed upright ends of said package (12)." This is an erroneous characterization of what Bond teaches. First, Bond does not teach a solid state battery. Second, the ends of the package (12) as clearly illustrated in FIGS. 1A, 1B, 2, and 4A of Bond clearly shows the ends of the package (12) as not being upright, but rather being planar with the other portions of the package (12). Additionally, Levy does not teach solid state batteries comprising battery cell arrays and control circuitry as does the Applicants' claimed invention. Therefore, Bond and Levy are missing a structural element recited in independent claim 5, and as such the rejection of independent claim 5 based on Bond and Levy is deficient and improper; accordingly independent claim 5 is patentable over Bond and Levy.

With respect to dependent claim 6, pages 13-14 of the Office Action suggests that Bond and Tuttle "are analogous art because they are from the same field of endeavour." However, the USPTO in classifying these patents has concluded the contrary; i.e., that Bond and Tuttle are not in the same art field. The USPTO has classified Bond in U.S. Classes 29/840; 257/678; 437/214; and 439/73 with a field of search including 228/20.1, 49.5, 228/212, 62; 29/840; 257/678; 437/214; and 439/73. Conversely, the USPTO has classified Tuttle in U.S. Classes 429/158; 429/157; and 429/162 with a field of search including 429/162, 157; and 429/158, 178. Thus,

there are no overlapping classes. Accordingly, one of ordinary skill in the art would not be motivated to combine references from two separate and wholly different art fields as classified by the USPTO in order to try and teach the Applicants' claimed invention. Hence, the proposed combination of Bond and Tuttle is improper; accordingly dependent claim 6 is patentable over Bond and Tuttle.

With respect to independent claim 7, pages 4-5 of the Office Action states that Bond provides "a multi-chip module (18 and 12) having a pair of opposed upright ends; at least one battery (solid state battery) connected to said multi-chip module (18 and 12); and at least one integrated circuit chip (18) connected to said battery (solid state battery)...wherein said at least one integrate[d] circuit chip (18) lays on top of a portion of said multi-chip module (18 and 12)." However, Bond does not teach a solid state battery and the ends of each of the multi-chip module (lower module (12) and integrated circuit (18)) as clearly illustrated in FIG. 1B of Bond clearly shows the ends of the lower module (12) and integrated circuit (18) as not being upright, but rather being planar with the other portions of the respective lower module (12) and integrated circuit (18). Furthermore, the battery (28) of Bond does not connect to what is being referred to as the multi-chip module (18 and 12) of Bond because as shown in FIG. 1B of Bond, the battery (28) is contained within the upper module (14), and as such does not and cannot connect to the so-called multi-chip module (18 and 12) of Bond. Additionally, the battery (28) in Bond does not connect to the integrated circuit (18) of Bond as clearly shown in FIG. 1B. Rather, as provided in col. 4, lines 12-16 of Bond, "[t]he chip 18 and bond wires 20 are covered by encapsulant 24, which may be for example, a plastic mold compound, epoxy, potting compound or other conventional integrated circuit encapsulant." As such, the integrated circuit (18) of Bond is not connected to the battery (28) due to the intervening encapsulant (24). Moreover,

with respect to the Office Action's conclusion that Bond teaches "wherein said at least one integrate[d] circuit chip (18) lays on top of a portion of said multi-chip module (18 and 12)," it is impossible for a structural element to lay upon itself, yet this is exactly what the Office Action concludes when it states that element (18) in Bond lays upon itself. Additionally, Levy does not teach solid state batteries comprising battery cell arrays and control circuitry as does the Applicants' claimed invention. Therefore, Bond and Levy are missing several structural elements recited in independent claim 7, and as such the rejection of independent claim 7 based on Bond and Levy is deficient and improper; accordingly independent claim 7 is patentable over Bond and Levy.

With respect to claim 8, page 5 of the Office Action states that Bond teaches that the "multi-chip module (18 and 12) connects to said at least one integrated circuit chip (18) through an interior portion of said multi-chip module (18 and 12)." However, it is impossible for a structural element to connect to itself through an interior portion of itself, yet this is exactly what the Office Action concludes when it states that element (18 and 12) in Bond connects to itself (element 12). Therefore, the rejection of dependent claim 8 based on Bond and Levy is deficient and improper; accordingly dependent claim 8 is patentable over Bond and Levy.

With respect to dependent claim 9, page 5 of the Office Action states that, in Bond, the "integrated circuit chip (18) connects (20, 26a, 26b, 28, 32a, 32b) to an upper indent portion of said multi-chip module (18 and 12)." However, a closer review of Bond suggests that this is an erroneous conclusion. First, there is no upper indent portion of the combined device (integrated circuit chip 18 and lower module 12). Second, it is impossible for a device (integrated circuit chip 18) to connect to itself, which is exactly what the Office Action is suggesting. Therefore, Bond is missing several structural elements recited in dependent claim 9, and as such the

rejection of dependent claim 9 based on Bond and Levy is deficient and improper; accordingly dependent claim 9 is patentable over Bond and Levy.

With respect to independent claim 10, page 6 of the Office Action states that Bond teaches "at least one battery (solid state battery) connected to said multi-chip module (18 and 12); and at least one integrated circuit chip (18) connected to said battery (solid state battery)...wherein said at least one battery (28) connects to a pair of opposed upright ends of said multi-chip module (18 and 12)." However, Bond does not teach a solid state battery and the ends of each of the multi-chip module (lower module (12) and integrated circuit (18)) as clearly illustrated in FIG. 1B of Bond clearly shows the ends of the lower module (12) and integrated circuit (18) as not being upright, but rather being planar with the other portions of the respective lower module (12) and integrated circuit (18). Furthermore, the battery (28) of Bond does not connect to what is being referred to as the multi-chip module (18 and 12) of Bond because as shown in FIG. 1B of Bond, the battery (28) is contained within the upper module (14), and as such does not and cannot connect to the so-called multi-chip module (18 and 12) of Bond. Additionally, the battery (28) in Bond does not connect to the integrated circuit (18) of Bond as clearly shown in FIG. 1B. Rather, as provided in col. 4, lines 12-16 of Bond, "[t]he chip 18 and bond wires 20 are covered by encapsulant 24, which may be for example, a plastic mold compound, epoxy, potting compound or other conventional integrated circuit encapsulant." As such, the integrated circuit (18) of Bond is not connected to the battery (28) due to the intervening encapsulant (24). Additionally, Levy does not teach solid state batteries comprising battery cell arrays and control circuitry as does the Applicants' claimed invention. Therefore, Bond and Levy are missing several structural elements recited in independent claim 10, and as such the rejection of independent claim 10 based on Bond and Levy is deficient and improper;

accordingly independent claim 10 is patentable over Bond and Levy.

With respect to independent claim 11, Miyata does not teach "wherein an upper surface of said pair of opposed upright ends is planar with an upper surface of said integrated circuit chip." as provided in amended independent claim 11. Rather, in Miyata the upper surface of the pair of opposed upright ends (of an integrated circuit package (1)) is significantly higher than the upper surface of the integrated circuit chip (6). Additionally, the suggestion of the Office Action, page 8, of modifying the upright ends of Miyata to be planar with the integrated circuit chip would not be obvious to one of ordinary skill in the art because it would require an extensive structural modification to Miyata and there is no suggestion in Miyata that (a) such a modification is structurally feasible, and (b) that such a modification is advantageous. Also, the Office Action suggests that such a modification "would be merely a shift in location of parts when operation of [the] device is not otherwise modified." However, such a modification is not merely a shift in location of parts. Rather, it is a substantial reduction in part size and geometry, which may very well modify the operation of the device depending on how the IC package 1 in Miyata is being utilized and to what additional devices it is being applied. Therefore, Miyata is missing a structural element recited in independent claim 11, and as such the rejection of independent claim 11 based on Miyata is overcome; accordingly independent claim 11 is patentable over Miyata.

Furthermore, with respect to claim 11, page 8 of the Office Action suggests that Miyata and Levy '028 "are analogous art because they are from the same field of endeavour." However, the USPTO and Japanese Patent Office in classifying these patents have concluded the contrary; i.e., that Miyata and Levy '028 are not in the same art field. The Japanese Patent Office has classified Miyata in International Classes H01L 25/00 and H01L 23/04. Conversely, the USPTO

has classified Levy '028 in International Class G08B 21/00. Thus, there are no overlapping classes. Accordingly, one of ordinary skill in the art would not be motivated to combine references from two separate and wholly different art fields as classified by the USPTO and Japanese Patent Office in order to try and teach the Applicants' claimed invention. Hence, the proposed combination of Miyata and Levy '028 is improper; accordingly claim 11 is patentable over Miyata and Levy '028.

With respect to dependent claims 12-15, pages 12-13 of the Office Action suggest that there is motivation to combine Miyata with Levy '028 and Levy '304. However, Applicants assert that (1) one of ordinary skill in the art would not have been properly motivated to combine Miyata and Levy '304; (2) Miyata and Levy '304 constitute non-analogous art; (3) there is no suggestion in either Miyata or Levy '304 for such a combination; (4) the International Classes for each of these references is wholly different; (5) given the age of the Levy '304 reference (nearly 30 years prior to Miyata), surely if these two references could be combined somehow, one would believe that someone would have made the combination in the interim, when in fact, no one had. Thus, with respect to (1) above, it appears that the Office Action is supposing that one of extra ordinary skill in the art would make such a combination as suggested in the Office Action, and not one of ordinary skill in the art. In fact, one of ordinary skill in the art in this field of endeavour is an engineer. It would not have been obvious to such an individual to combine parts of Miyata with parts of Levy '304 in order to practice the Applicants' invention. This is so because Levy '304 is directed to a bone generating method device used in the biotechnology industry. Conversely, Miyata is directed to integrated circuit packaging used in the semiconductor industry. With respect to (2) above, Miyata and Levy '304 are directed to different fields of endeavour as described above and as such their combination is unobvious and

one of ordinary skill in the art would not be motivated to make such a combination. With respect to (3) and (5) above, because Levy '304 predates Miyata by nearly 30 years, if Levy '304 were in fact analogous art applicable to the semiconductor industry, then surely Miyata would have either mentioned the teachings of Levy '304 or incorporated it into its design because by the time the Miyata patent application was filed, Levy '304's patent term would have expired and such could be freely used. However, this incorporation of Levy '304 into Miyata did not occur. With respect to (4) above, Levy '304 is classified under International Class A61N 1/36. Conversely, Miyata is classified under International Class H01L 25/00 and H01L 23/04. Also, Levy '028 is classified under International Class G08B 21/00. Accordingly, these three references constitute different fields of endeavour and are non-analogous art, and would not have been combined by one of ordinary skill in the art. Therefore, the rejection of dependent claims 12-15 based on Miyata in view of Levy '028 and Levy '304 is deficient and improper; accordingly dependent claims 12-15 are patentable over Miyata in view of Levy '028 and Levy '304.

With respect to independent claim 16, pages 9-10 of the Office Action states that Matsuura teaches "a package (20) having a pair of opposed upright ends." However, a closer review of FIGS. 1A-5B of Matsuura reveals no such teaching. In fact, the circuit board (20) of Matsuura is flat (i.e., has no upright ends), let alone a pair of opposed upright ends. Therefore, Matsuura is missing structural elements recited in independent claim 16, and as such the rejection of independent claim 16 based on Matsuura and Levy is deficient and improper; accordingly independent claim 16 is patentable over Matsuura and Levy.

Furthermore, with respect to claim 1, page 7 of the Office Action suggests that Matsuura and Levy '028 "are analogous art because they are from the same field of endeavour." However, the USPTO in classifying these patents has concluded the contrary; i.e., that Matsuura and Levy

‘028 are not in the same art field. The USPTO has classified Matsuura in U.S. Classes 429/96; 429/100; and 257/499 with a field of search including 429/96, 100; and 257/499. Conversely, the USPTO has classified Levy ‘028 in U.S. Classes 340/635; 340/653; 324/555; 324/556; 116/208; and 116/216 with a field of search including 340/635, 653; 324/555, 556; and 116/276, 207, 209, 211, 216, 217, 219, and 221. Thus, there are no overlapping classes. Accordingly, one of ordinary skill in the art would not be motivated to combine references from two separate and wholly different art fields as classified by the USPTO in order to try and teach the Applicants’ claimed invention. Hence, the proposed combination of Matsuura and Levy ‘028 is improper; accordingly claim 16 is patentable over Matsuura and Levy ‘028.

With respect to dependent claim 17, page 10 of the Office Action states that Matsuura teaches that the “battery (40) is held adjacent to said integrated circuit chip (12) by said package (20).” However, FIGS. 2A and 2B clearly show that the battery (4) is held adjacent to the integrated circuit chip (12) by the connecting terminal 14a. Therefore, Matsuura is missing structural elements recited in dependent claim 17, and as such the rejection of dependent claim 17 based on Matsuura and Levy is deficient and improper; accordingly dependent claim 17 is patentable over Matsuura and Levy.

With respect to dependent claims 18 and 19, pages 10 and 11 of the Office Action states that Matsuura teaches the features recited in dependent claims 18 and 19. However, dependent claims 18 and 19 depend on independent claim 16, which is patentable over Matsuura. As such, the rejection of dependent claims 18 and 19 based on Matsuura and Levy is deficient and improper due to their dependency on independent claim 16; accordingly dependent claims 18 and 19 are patentable over Matsuura and Levy.

With respect to dependent claim 20, pages 11-12 of the Office Action states that

Matsuura in view of Levy fails to teach "multiple solid state batteries stacked on said package." However, the Office Action states that Tuttle teaches such features, and if combined with Matsuura and Levy, would teach the Applicants' claimed invention. However, the battery in Tuttle is a button-type battery (see col. 2, lines 45-46 of Tuttle). Conversely, the Applicants' batteries are solid state batteries. Again, the Applicants' solid state batteries are formed on a semiconductor chip using semiconductor material and processing. The button-type batteries described in Tuttle are conventional chemical-electrical type batteries formed using thick film technology. These batteries are discrete devices, separately packaged, and are generally not formed on a semiconductor substrate and not fabricated by using semiconductor processes. The disadvantages of the conventional batteries in Tuttle are: (1) bulky, (2) low-efficiency; and (3) hard to be integrated with chips. Moreover, the conventional batteries are typically just mechanically clipped in the package, while the Applicants' solid state battery is mounted like a chip using C4 or wiring bonding. Additionally, Levy does not teach solid state batteries comprising battery cell arrays and control circuitry as does the Applicants' claimed invention. Therefore, Matsuura in view of Levy in further view of Tuttle is missing a structural element recited in dependent claim 20, and as such the rejection of dependent claim 20 based on Matsuura in view of Levy in further view of Tuttle is overcome; accordingly dependent claim 20 is patentable over Matsuura in view of Levy in further view of Tuttle.

Insofar as references may be combined to teach a particular invention, and the proposed combination of Bond with Levy '028, Kobayashi with Levy '028, Miyata with Levy '028, Matsuura with Levy '028, Matsuura with Levy '028 and Tuttle, Miyata with Levy '028 and Levy '304, and Bond with Tuttle, case law establishes that, before any prior-art references may be validly combined for use in a prior-art 35 U.S.C. § 103(a) rejection, the individual references

themselves or corresponding prior art must suggest that they be combined.

For example, in In re Sernaker, 217 U.S.P.Q. 1, 6 (C.A.F.C. 1983), the court stated: “[P]rior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings.” Furthermore, the court in Uniroyal, Inc. v. Rudkin-Wiley Corp., 5 U.S.P.Q.2d 1434 (C.A.F.C. 1988), stated, “[w]here prior-art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gleaned from the invention itself. . . . Something in the prior art must suggest the desirability and thus the obviousness of making the combination.”

In the present application, the reason given to support the proposed combination is improper, and is not sufficient to selectively and gratuitously substitute parts of one reference for a part of another reference in order to try to meet, but failing nonetheless, the Applicants’ novel claimed invention. Furthermore, the claimed invention, as amended, meets the above-cited tests for obviousness by including embodiments such as “solid state battery comprising battery cell arrays and control circuitry” as recited in amended independent claims 1, 5, 7, 10, 11, and 16 and “wherein said pair of opposed upright ends comprise a first end having a first upper surface and a second end having a second upper surface, wherein the first and second surfaces are substantially planar to one another,” as recited in amended independent claims 1, 5, 7, 10, and 16. As such, all of the claims of this application are, therefore, clearly in condition for allowance, and it is respectfully requested that the Examiner pass these claims to allowance and issue.

As declared by the Federal Circuit:

In proceedings before the U.S. Patent and Trademark Office, the Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art. The Examiner can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary

skill in the art would lead that individual to combine the relevant teachings of the references. In re Fritch, 23 U.S.P.Q.2d 1780, 1783 (Fed. Cir. 1992) citing In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988).

Here, the Examiner has not met the burden of establishing a *prima facie* case of obviousness. It is clear that, not only does Bond, Kobayashi, Matsuura, and Miyata, individually fail to disclose all of the elements of the claims of the present invention, particularly, the solid state battery, upright ends of the package, and manner of connection between the package, battery, and integrated circuit chip, and upper planar surfaces of the upright ends as discussed above, but also, if combined with Levy '028, Levy '304, and Tuttle, respectively, fails to disclose these elements as well. The unique elements of the claimed invention are clearly an advance over the prior art.

The Federal Circuit also went on to state:

The mere fact that the prior art may be modified in the manner suggested by the Examiner does not make the modification obvious unless the prior art suggested the desirability of the modification. . . . Here the Examiner relied upon hindsight to arrive at the determination of obviousness. It is impermissible to use the claimed invention as an instruction manual or "template" to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. Fritch at 1784-85, citing In re Gordon, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

Here, there is no suggestion that Bond, Kobayashi, Matsuura, and Miyata, alone or in various combinations with Levy '028, Levy '304, or Tuttle, teaches a structure containing all of the limitations of the Applicants' claimed invention. Consequently, there is absent the "suggestion" or "objective teaching" that would have to be made before there could be established the legally requisite "prima facie case of obviousness."

In view of the foregoing, the Applicants respectfully submit that the collective cited prior art do not teach or suggest the features defined by amended independent claims 1, 5, 7, 10, 11,

and 16 and, as such, claims 1, 5, 7, 10, 11, and 16 are patentable over Bond, Kobayashi, Matsuura, and Miyata, alone or in various combinations with Levy '028, Levy '304, or Tuttle. Further, dependent claims 2-4, 6, 8, 9, 12-15, and 17-20 are similarly patentable over Bond, Kobayashi, Matsuura, and Miyata, alone or in various combinations with Levy '028, Levy '304, or Tuttle, not only by virtue of their dependency from patentable independent claims, respectively, but also by virtue of the additional features of the invention they define. Moreover, the Applicant notes that all claims are properly supported in the specification and accompanying drawings. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections.

## II. Formal Matters and Conclusion

With respect to the rejections to the claims, the claims have been amended, above, to overcome these rejections. In view of the foregoing, the Examiner is respectfully requested to reconsider and withdraw the rejections to the claims.

In view of the foregoing, Applicants submit that claims 1-20, all the claims presently pending in the application, are patentably distinct from the prior art of record and are in condition for allowance. The Examiner is respectfully requested to pass the above application to issue at the earliest possible time.

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary. Please charge any deficiencies and credit any overpayments to Attorney's Deposit Account Number 50-0510.

Respectfully submitted,



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